



## WILDLIFE MANAGEMENT

## AND RESEARCH NOTES

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	TITLE: 2008 Landowner/Tenant Survey	

### ABSTRACT

The Division of Fish and Wildlife randomly sampled 15,000 farm operators statewide in April 2009. The mean acreage for respondents statewide was 489, and nearly 21% of all respondents claimed that more than 75% of their household's income was due to farming. As in years past, deer were indicated as the most common species involved in depredation (56%) and groundhogs were the second most commonly indicated species (24%). Statewide, the mean and median percent of crop loss from depredation by deer was 36 and 15, respectively. Respondents characterized their damage as negligible (18%), tolerable (36%), and unreasonable (26%), while 20% were unsure. Statewide, the mean and median dollar value of crops lost to deer damaged was \$1,052 and \$500, respectively. Only 3.6% of respondents indicated that they contacted the Department of Natural Resources (DNR) concerning their crop damage. Approximately 55% of the respondents indicated that they wanted a decrease in the deer population in their county. Thirty-three percent (33%) of the operators wanted a substantial reduction, 22% wanted a slight reduction, 34% wanted the population stabilized at current levels, 7% wanted a slight increase, and 4% wanted a substantial increase. The statewide Farmer Dissatisfaction Value (FDV) increased 25% from the 2004 survey, and only 19% of the counties showed a decrease in the FDV. Over 72% of the operators had some deer hunting occurring on their property, and 33% of the respondents indicated that they or family members deer hunt on their property. Leasing of land for hunting is not widespread in Indiana at this time nor has it increased significantly since 1998; only 2% of the operators indicated that they lease their property for hunting.

### INTRODUCTION

The goal of the deer management program in Indiana is to balance the deer population desires of all constituencies in the state while maintaining a healthy deer herd. Typically, hunters and wildlife enthusiasts desire more opportunity to harvest or observe deer (Mitchell and Walker 2002, Weaver and McNew 2004) and lobby for increased deer numbers. This creates a conflict for farm operators who stand to suffer monetary losses from the presence of deer. Compounding the problem is the perception of farmers that their interests have become less important than other user groups to natural resource agencies (Decker et al. 1984). To address these issues, the Division of

Fish and Wildlife (DFW) systematically surveys farm operators across the state to assess their attitudes toward deer, deer damage, and deer hunting (Pruitt 1988, Cornicelli 1994, Weaver 1999).

## OBJECTIVES

The objectives of this study were to assess Indiana farm operator opinions toward the deer population, deer-related crop damage, and deer hunting in their county, and to compare responses to selected questions with preceding surveys.

## PROCEDURES

*Sampling.*—A random sample of 15,000 farm operators was selected by the United States Department of Agriculture (USDA) from their database, and a questionnaire (Fig. 1) was mailed in April, 2009 to each farm operator. There was no follow-up mailing to non-respondents or test for non-response bias because names, addresses, and telephone numbers remained under the control of USDA.

*Data Analysis.*—Data were organized statewide and by county. Survey respondents were accepted or rejected for inclusion in a specific analysis on a question-by-question basis. Question 7 asked for the operator's estimate of the dollar value in crop damage from deer. Large damage values standardized for acreage that exceeded 1.5 times the Inter-Quartile range were eliminated as extreme outliers. These few data points which represent damage claims greater than \$5,500, had strong effects on means and standard deviations and were thought to unfairly bias the sample. In addition, district biologists have rarely investigated field complaints that even approach \$5,000 in value much less \$20,000 to \$50,000 as claimed by some respondents (Cornicelli 1994).

The following three measures to assess crop damage by deer in this survey: a quantitative estimate for the percent of all crop damage felt to be caused by deer, a qualitative measure of tolerance for the amount of deer damage incurred, and a quantitative estimate of the dollar value of crops lost to deer.

Weaver (1999) reported that the median, being more robust than the mean, is being used more frequently in publications from other states when examining dollar values and other aspects of deer damage. Comparisons of loss estimated by farmers with that documented by inspectors showed that median loss estimates were much closer to inspected loss than mean loss estimates. Analyses were conducted using both means and medians wherever possible so that other states can make comparisons with Indiana's data.

Data pertaining to crop loss was analyzed using a Generalized Linear Model. Chi-square tests and contingency tables were used to test for differences in the frequencies of nominal, or categorical, variables (e.g., did operators who found damage to be unreasonable indicate they were more or less aware of depredation programs than other operators?). A statistical significance level of  $\alpha = 0.05$  was used throughout.

*Calculation of the Farmer Dissatisfaction Value (FDV) and Ranking.*—As in the previous 2 Farm Operator Surveys (Weaver 1999, McNew 2004), farm operators were asked to state their desired trend for the deer population in their county. The choices ranged from "substantially increase" on one end of the continuum through "substantially decrease" on the other end (Fig.1,

question 5). Responses for each of the 5 possible choices were tabulated by county. In order to differentiate between farmers who wanted no or slight changes from those who wanted major changes, the percentage of respondents providing a given answer was multiplied by a constant as follows: Substantially increase = -2, Slightly increase = -1, Stabilize = 0, Slightly decrease = 1, Substantially decrease = 2. Thus, if there were a perfectly even distribution among responses or all persons wanted stabilization, the county dissatisfaction value would be zero (Weaver 1999). If all respondents wanted to substantially increase the population, the value would be -200; otherwise, the opposite condition would yield a value of +200. Counties were ranked from 1 - 92 based on their FDVs; counties with greater FDVs were assigned higher rankings.

## RESULTS

*Survey Response.*—Questionnaires were mailed to 15,000 farm operators in the USDA database. Of the 15,000 farm operators surveyed, 124 questionnaires were undeliverable, and 5,181 usable surveys were returned for an adjusted response rate of 34.8%. This rate is 5% less than the 2004 response rate when fewer operators were surveyed (12,000; McNew 2004) and the same as the 1998 survey when 12,000 operators in the Indiana Agricultural Statistics Service database was surveyed (Weaver 1999). Brown and Marion counties had the fewest responses (5 and 8, respectively) while the greatest number of responses came from Allen county (169). Usable responses varied due to question non-response, so *N* will not always be equivalent and percentages will not always sum to 100.

*Farm Size and Income.*—Almost 21% of all respondents claimed that more than 75% of their household's income was due to farming (Table 1). No attempt was made to stratify the mailing by farm size, and thus, the variability in farm size is high. The mean acreage for respondents statewide was 479 (median = 148,  $n = 5,107$ ,  $SE = 27.84$ ) and was substantially larger than reported in 2004 ( $n = 304$ , median = 119,  $n = 4,646$ ,  $SE = 7.9$ ).

*Agricultural Losses.*—Combined, 85% (2,129) of respondents ( $n = 2,476$ ) named corn or soybeans as the primary crop most frequently damaged by deer, and 85% (1,236 of 1,452) named corn or soybeans as the secondary crop most frequently damaged by deer. Table 2 shows the frequency distribution of both primary and secondary crops listed as damaged by deer.

Deer were indicated as the most common species involved in depredation (56% of total respondents). Groundhogs were the second most commonly indicated species (24%) causing damage, followed closely by raccoons at 21% (Table 3). Statewide, the mean and median percent of crop loss from depredation by deer was 36 and 15 respectively, while the mean and median percent lost from groundhogs was 9 and 5, respectively (Table 3). The distribution of responses for the percentage of crops lost to deer was skewed with 36% of respondents estimating crop loss from deer at less than or equal to 5% of all damage, 8% of respondents reporting 41-60% loss from deer, and 12% of respondents reporting loss from deer greater than or equal to 90% (Table 4).

While only 52% of the respondents identified specific crops and percentages of yield damaged by deer, 89% of the respondents gave a qualitative self-assessment of their tolerance toward deer damage. Respondents characterized their damage as negligible (18%), tolerable (36%), and unreasonable (27%), while 20% were unsure. Excluding outliers, respondents who reported mean and median dollar value of corn and soybean crops lost due to deer differed between those groups with differing tolerances ( $F_{3, 1256} = 56.8$ ,  $P < 0.001$ ; Table 5). The mean and median proportion of crops lost were significantly different between these groups as well ( $F_{3, 968} = 6.9$ ,

$P < 0.001$ ; Table 5). Statewide, the self-assessed mean and median dollar value of corn and soybeans as primary crops lost to deer damage was \$1,052 and \$500, respectively ( $SE_{\text{mean}} = 37.1$ ,  $n = 1,260$ ). Damage per acre was quite variable statewide, ranging from 0 to \$300 dollars/acre with a statewide mean of \$16.37/acre (median = \$7.48/acre,  $SE_{\text{mean}} = 0.71$ ; Table 5). Operators who felt their crop damage by deer was unreasonable reported significantly higher mean and median dollar loss per acre than the other groups ( $F_{3, 1204} = 35.2$ ,  $P < 0.001$ ; Table 5).

*Operator and DNR Interaction.*—Only 3.5% of respondents (145 of 4,139) indicated that they contacted the Department of Natural Resources (DNR) concerning their crop damage. Operators who characterized their damage as “unreasonable” in question #7 were much more likely to contact the DNR ( $\chi^2_{4, 3809} = 277.8$ ,  $P < 0.001$ ). Thirty-three percent (33%; 1,393 of 4,195) of survey respondents were aware of DNR programs to assist in alleviating crop damage by deer. Only 30% of the operators who characterized their damage as “unreasonable” in question #6 were aware of any DNR programs, as opposed to 36% who characterized their damage as either “tolerable” or “negligible”.

*Attitudes Toward Deer.*—Statewide, over half (56%; 2,547 of 4,578) of the respondents indicated that they wanted a decrease in the deer population in their county. Approximately 33% of the operators wanted a substantial reduction, 22% wanted a slight reduction, 33% wanted the population stabilized at current levels, 7% wanted a slight increase, and 4% wanted a substantial increase. Statewide and county-specific values are shown in Table 6. Farmer Dissatisfaction Values (FDV) ranged from 14 to 160 with the mean and median values equal to 76 and 73, respectively. The statewide FDV was 73, which represents a 23.7% increase from 2003. On a county basis, 18 of the 92 counties (19.5%) had a decrease in the FDV from the 2003 survey (Table 7).

The qualitative assessment of deer damage was related to the operator’s response toward the desired future deer trend. As the degree of deer damage became more severe, respondents were more likely to want a more drastic reduction in the deer population in their county (Table 8).

*Farm Operators and Hunting.*—Over 72% of the operators who responded had some deer hunting occurring on their property; 41% allowed their family to hunt, 38% allowed their friends to hunt, and 29% allowed hunters who asked for permission to hunt. Nearly 4% allow lessees to hunt on their property. Over 28% of farm operators indicated that no hunters asked permission to hunt their property in 2008, while 34.1% indicated that only 1-2 hunters asked permission, and 24.4% indicated that 3-4 hunters asked permission. Approximately 40% of farm operators did not allow hunters (other than family members and tenants) hunt their property, 33% only allowed 1-2 hunters, and 17.8% allowed 3-4 to hunt their property. Just over 1% of farm operators allowed at least 10 hunters to hunt their property.

When asked if they lease any of their property for hunting (Fig. 1, question 15), 2.7% of farm operators responded affirmatively, which was 29% increase from the 2004 survey (2.1%). The mean and median acreage was larger for those respondents who leased property for hunting ( $\bar{x}_{\text{lease}} = 306$ ,  $\text{median}_{\text{lease}} = 250$ , 95% C.I. = 261-352;  $\bar{x}_{\text{not lease}} = 178$ ,  $\text{median}_{\text{lease}} = 111$ , 95% C.I. = 172-184;  $F_{1, 3,987} = 43.2$ ,  $P < 0.05$ ).

## DISCUSSION

Although income from farming remained similar to 2003, the average reported farm size (479 acres) increased considerably from that in 2003 (304) and was closer to what was reported in 1998 (402 acres). These estimates conflict with the average farm size reported for 1998 and 2003 by the National Agricultural Statistics Service (NASS). Based on all farms in Indiana, the mean farm size increased from 236 acres in 1998 to 252 acres in 2003, and declined in 2008 to 243 acres ([www.nass.usda.gov](http://www.nass.usda.gov)). It is possible that larger farms may have been more inclined to fill out the survey, thus over-representing larger farms as opposed to average or smaller sized farms.

There was a 10.5% decline in the number of farmers who receive more than 75% of their household income from agriculture. Weaver (1999) and McNew (2004) reported a similar trend and noted that this is likely related to the decrease in the statewide number of farming households. However, McNew (2004) reported this trend may also be the result of smaller farmers supplementing their incomes by other means.

Farm operators remain relatively unaware of DNR programs to alleviate deer damage. In fact, the number of respondents indicating that they contacted the DNR concerning their crop damage, as well as the percentage of farmers who were aware of DNR programs, decreased slightly from that reported in 2004. The Division has never advertised the depredation permit program. In order to learn of the permit program, a farmer must first call his district biologist to complain about damage to his crops. It seems reasonable then that the number of aware operators would remain similar from year to year as long as actual damage remains at the same level.

As in previous years, farm operators reported deer caused most of their damage. However, Cornicelli (1994) noted that damage by other wildlife species might be attributed to deer because deer are the most visible cause of damage. Moreover, the USDA believes that deer are actually responsible for only about a third of the total wildlife-caused crop damage (Weaver 1999). Corn and soybeans were reported as the top crops damaged by deer, likely because they are the primary crops for the majority of the operators surveyed, and ultimately, the primary crops of operators statewide.

The median dollar value of corn and soybean crops lost to deer in 2008 increased over 11% (from \$448 to \$500) as compared to 2004, however the 2004 survey looked at all crops, where we specifically analyzed corn and soybean crops. Other crops, such as vineyards and truck crops, may experience higher amounts of damage due to the specialty of the crop. However, this value is still greater than the average monetary loss of \$322/farm in 1993 (Cornicelli 1994). Although this estimate is useful in assessing yearly farmer attitudes toward deer damage, I would hesitate to use it as an actual estimate of monetary loss since it reflects farm operators' perceptions of deer damage, rather than quantified losses. Reported dollar amount per-acre deer damage by deer increased 102% in 2008 as compared to 2003. According to the NASS, the average price/bushel of corn (the primary crop of Indiana farmers) increased 62% and the average price/bushel of soybeans increased 33%. The total value of corn production in Indiana increased 80% from 2003 to 2008 and 59% for soybeans during that same period. Thus the increase in per-acre deer damage is likely the result of increased per-acre crop value and not increased crop depredation by deer. Conover and Decker (1991) also found that individual farmers estimates of crop loss may not be reliable.

It appears that the increased crop prices, as well as an increased deer population, have combined to provide farm operators their most negative opinion regarding deer in over 10 years. The mean percentage of crop loss caused by deer, as perceived by farmers, decreased 3 percentage points (39% to 36%) from the 2003 survey. However, farm operator qualitative assessments of deer damage indicated that farmers are less tolerant of deer than they were in 2004; 66% of respondents

thought deer damage was either negligible or tolerable in 2003 as compared to 53.5% in 2008. The number of respondents who would like to see the deer population stabilized at current levels (33%) or increased (11%) totaled 44%, a decrease from the 2003 survey, when both categories totaled 50%. In addition, FDVs have increased since the 1998 survey and are the highest since the previous two surveys.

As expected, as well as in years' past, there was a significant relationship between monetary losses and perceptions of damage, degree of damage, and desired population trend. The mean and median dollar losses, as well as perceived damage, were much greater for those who considered their damage to be unreasonable. Intuitively, these same respondents overwhelmingly indicated that they desired reductions of their local deer herds.

The percentage of farm operators who allow hunting on their property (~72%) declined from that reported in 1998 and 2003. Generally, hunter access on farms was limited to family and friends and relatively few respondents permit the general public to hunt on their property. Even fewer operators reported leasing their property for hunting (2-3%), and leasing was more prevalent for operators with larger farms.

## CONCLUSION

A majority of Indiana farm operators would like to see a decrease in the deer population, and their attitudes toward deer have become increasingly more negative since 1998. Farm operators who have experienced the highest level of damage believe the deer population needs to be drastically reduced, while others appear to prefer the herd stabilized at current levels. Considering that Indiana farmers do little else besides hunting to alleviate deer damage (Cornicelli 1994), the switch to a more negative outlook on the deer herd may be due to an increased deer population, increased crop prices, or both.

Because Indiana farmers seldom use other methods to alleviate deer damage such as repellents and fencing (Cornicelli 1994), hunting is the primary, if not only, method to reduce local deer densities and reduce damage. Therefore, it is counter-productive that operators limit hunting on their property to family and friends. In order to decrease deer depredation and farmer dissatisfaction, hunter access needs to be liberalized. Managers need to address this issue and encourage increased hunter access to private lands.

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Table 1. The percentage of household income from agriculture as reported by respondents to the 2008 Farm Operator Survey.

Farm Income*	n	% of Respondents
0-25%	2,587	55.30%
25-50%	636	13.60%
50-75%	496	10.60%
75-100%	959	20.50%
TOTAL	4,678	100.00%

\*as a percentage of total household income

Table 2. Frequency distribution of the primary and secondary crops most frequently named as damaged by deer in the 2008 Farm Operator Survey.

Crop Damaged	Primary Crop		Secondary Crop	
	Frequency	Percent	Frequency	Percent
Corn	1,794	72.46	157	10.81
Soybeans	335	13.53	1,079	74.31
Timber	59	2.38	33	2.27
Wheat	42	1.70	40	2.75
Hay	62	2.50	36	2.48
Alfalfa	28	1.13	17	1.17
Garden	15	0.61	24	1.65
Orchard and Fruit Trees	42	1.70	19	1.31
Other Trees	87	3.51	37	2.55
Pasture	5	0.20	8	0.55
Berries and Grapes	7	0.28	2	0.14
Totals	2,476	100.00	1,452	100.00

Table 3. Frequency distribution, mean, and median percentage of crop damage claimed by farm operators to be caused by various species as reported in the 2008 Farm Operator Survey (n = 5,181)

Species	Frequency (%)	Mean (%)	Median (%)	N
Deer	56.4	36.14	15.0	2924
Raccoon	21.0	15.91	10.0	1086
Squirrel	16.2	7.50	5.0	838
Bird	16.6	9.53	5.0	858
Groundhog	24.3	8.69	5.0	1261
Beaver	8.8	11.88	5.0	455
Feral Pig	2.5	15.65	10.0	127
Other	6.8	23.98	10.0	351

Table 4. Frequency distribution of the percent of crop damage estimated by the farm operator to be caused by deer in 2008.

Estimated Crop Loss (%)	Frequency	Percent of Responses
≤ 5	1,074	36.7
6-10	368	12.6
11-20	186	6.4
21-30	100	3.4
31-40	81	2.8
41-50	167	5.7
51-60	60	2.1
61-70	87	3.0
71-80	238	8.1
81-90	216	7.4
91-100	347	11.9
Total	2,924	100.0

Table 5. Mean and median loss of corn and soybeans as a primary crop due to deer, expressed as estimated dollar and percent of total crop lost in the 2008 Farm Operator Survey

Qualitative self-assessment of crop damage by deer	Frequency (%)	Median		SE of Crop Loss (%)		Median		Mean Crop Loss (\$)		SE for Crop Loss (\$)		Mean Crop Loss (\$/acre)		SE for Crop Loss (\$/acre)	
		Crop Loss (%)	Loss (%)	Loss (%)	Loss (%)	Crop Loss (\$)	Loss (\$)	Crop Loss (\$)	Loss (\$)	Crop Loss (\$/acre)	Loss (\$/acre)	Crop Loss (\$/acre)	Loss (\$/acre)		
Negligible	17.8	1.0	4.67	0.89	247.5	687.26	70.28	3.36	9.82	1.17					
Tolerable	35.7	2.0	4.99	0.59	400.0	737.59	50.47	5.81	10.98	0.70					
Unreasonable	26.5	5.0	10.03	1.05	1,500.0	1,795.32	84.29	20.00	27.22	1.62					
Don't Know	20.0	4.0	7.06	1.69	500.0	954.44	77.04	6.67	17.58	2.15					
Statewide		3.0	6.72	0.50	500.0	1,052.40	37.14	7.48	16.34	0.71					
<i>N</i>		972	972		1,260	1,260		1,208	1,208						

Table 6. Desired trend for the deer populations, Farmer Dissatisfaction Value (FDV), and ranking by county from the 2008 Farm Operator Survey.

County	Substantial Increase		Slight Increase		Stabilize		Slight Decrease		Substantial Decrease		N TOTAL	Dissatisfaction Score	Rank
	N	(%)	N	(%)	N	(%)	N	(%)	N	(%)			
Adams	13	16.7	4	5.1	25	32.1	20	25.6	16	20.5	78	28	89
Allen	4	2.4	20	11.8	68	40.2	40	23.7	37	21.9	169	51	77
Bartholomew		0.0	3	5.9	20	39.2	11	21.6	17	33.3	51	82	34
Benton		0.0	6	9.4	22	34.4	11	17.2	25	39.1	64	86	30
Blackford	1	5.3	1	5.3	9	47.4	5	26.3	3	15.8	19	42	83
Boone	1	2.0	3	6.1	16	32.7	15	30.6	14	28.6	49	78	40
Brown		0.0		0.0	1	20.0		0.0	4	80.0	5	160	1
Carroll		0.0	1	2.4	11	26.2	15	35.7	15	35.7	42	105	17
Cass	1	1.7	3	5.1	16	27.1	15	25.4	24	40.7	59	98	25
Clark	2	4.5	2	4.5	13	29.5	10	22.7	17	38.6	44	86	29
Clay	3	2.9	7	6.8	34	33.0	30	29.1	29	28.2	103	73	46
Clinton		0.0	3	5.2	21	36.2	17	29.3	17	29.3	58	83	33
Crawford		0.0		0.0	4	28.6	2	14.3	8	57.1	14	129	3
Daviess	4	13.3	1	3.3	13	43.3	8	26.7	4	13.3	30	23	90
Dearborn		0.0	1	3.1	7	21.9	10	31.3	14	43.8	32	116	8
Decatur	2	3.8	4	7.7	21	40.4	11	21.2	14	26.9	52	60	67
Dekalb	6	6.5	6	6.5	26	28.0	26	28.0	29	31.2	93	71	51
Delaware		0.0	10	18.5	21	38.9	12	22.2	11	20.4	54	44	80
Dubois	4	5.9	8	11.8	25	36.8	16	23.5	15	22.1	68	44	81
Elkhart	1	2.8	1	2.8	10	27.8	9	25.0	15	41.7	36	100	23
Fayette	1	4.2	2	8.3	5	20.8	4	16.7	12	50.0	24	100	24
Floyd	1	10.0	1	10.0	3	30.0	3	30.0	2	20.0	10	40	84
Fountain	1	1.6		0.0	20	31.7	10	15.9	32	50.8	63	114	9
Franklin	5	11.9	2	4.8	13	31.0	8	19.0	14	33.3	42	57	69
Fulton	3	5.9	5	9.8	9	17.6	14	27.5	20	39.2	51	84	32
Gibson	4	5.3	6	7.9	24	31.6	16	21.1	26	34.2	76	71	49
Grant	3	6.0	3	6.0	20	40.0	9	18.0	15	30.0	50	60	66
Greene	4	8.5	5	10.6	11	23.4	6	12.8	21	44.7	47	74	45
Hamilton	1	2.8	2	5.6	12	33.3	12	33.3	9	25.0	36	72	47

Table 6 continued.

County	Substantial Increase		Slight Increase		Stabilize		Slight Decrease		Substantial Decrease		N TOTAL	Dissatisfaction Score	Rank
	N	(%)	N	(%)	N	(%)	N	(%)	N	(%)			
Hancock	3	7.1	5	11.9	15	35.7	4	9.5	15	35.7	42	55	73
Harrison	2	2.6	8	10.4	30	39.0	13	16.9	24	31.2	77	64	63
Hendricks	2	7.7		0.0	10	38.5	6	23.1	8	30.8	26	69	55
Henry	2	4.8	5	11.9	17	40.5	5	11.9	13	31.0	42	52	75
Howard	2	3.6	2	3.6	27	48.2	9	16.1	16	28.6	56	63	65
Huntington		0.0	8	14.3	18	32.1	13	23.2	17	30.4	56	70	53
Jackson	4	6.3	4	6.3	20	31.7	11	17.5	24	38.1	63	75	44
Jasper	2	3.5		0.0	17	29.8	12	21.1	26	45.6	57	105	16
Jay	4	10.8	6	16.2	14	37.8	7	18.9	6	16.2	37	14	92
Jefferson	1	2.2	4	8.7	11	23.9	12	26.1	18	39.1	46	91	27
Jennings	4	10.8	3	8.1	12	32.4	7	18.9	11	29.7	37	49	78
Johnson	1	2.6	3	7.9	15	39.5	6	15.8	13	34.2	38	71	50
Knox	2	3.4	8	13.8	21	36.2	17	29.3	10	17.2	58	43	82
Kosciusko	4	4.8	4	4.8	16	19.0	19	22.6	41	48.8	84	106	15
Lagrange		0.0	4	10.8	9	24.3	10	27.0	14	37.8	37	92	26
Lake	2	5.1	3	7.7	15	38.5	11	28.2	8	20.5	39	51	76
Laporte	2	3.6	1	1.8	21	38.2	13	23.6	18	32.7	55	80	37
Lawrence		0.0	7	11.1	19	30.2	16	25.4	21	33.3	63	81	35
Madison	2	2.7	8	10.7	39	52.0	14	18.7	12	16.0	75	35	88
Marion		0.0	1	12.5	5	62.5		0.0	2	25.0	8	38	87
Marshall	4	5.1	2	2.6	20	25.6	11	14.1	41	52.6	78	106	14
Martin	2	12.5		0.0	7	43.8	1	6.3	6	37.5	16	56	71
Miami	3	4.2	3	4.2	22	30.6	21	29.2	23	31.9	72	81	36
Monroe		0.0	1	4.3	7	30.4	5	21.7	10	43.5	23	104	19
Montgomery	2	3.0	2	3.0	24	36.4	14	21.2	24	36.4	66	85	31
Morgan		0.0	4	7.8	16	31.4	18	35.3	13	25.5	51	78	38
Newton	1	2.4		0.0	14	34.1	8	19.5	18	43.9	41	102	21
Noble	3	3.6	12	14.3	29	34.5	15	17.9	25	29.8	84	56	72
Ohio	1	0.0	1	7.7	5	38.5	4	30.8	3	23.1	13	69	56
Orange	1	2.8	2	5.6	5	13.9	12	33.3	16	44.4	36	111	11
Owen	3	7.0	2	4.7	15	34.9	9	20.9	14	32.6	43	67	59

Table 6 continued.

County	Substantial Increase		Slight Increase		Stabilize		Slight Decrease		Substantial Decrease		N TOTAL	Dissatisfaction Score	Rank
	N	(%)	N	(%)	N	(%)	N	(%)	N	(%)			
Parke		0.0	3	11.5	3	11.5	8	30.8	12	46.2	26	112	10
Perry	1	4.8	1	4.8	8	38.1	3	14.3	8	38.1	21	76	42
Pike	5	11.4	4	9.1	15	34.1	9	20.5	11	25.0	44	39	85
Porter	1	3.0	4	12.1	6	18.2	9	27.3	13	39.4	33	88	28
Posey	2	2.7	5	6.8	31	41.9	12	16.2	24	32.4	74	69	57
Pulaski	2	2.9	1	1.4	7	10.0	7	10.0	53	75.7	70	154	2
Putnam	3	5.9	7	13.7	13	25.5	10	19.6	18	35.3	51	65	62
Randolph		0.0	5	10.2	25	51.0	11	22.4	8	16.3	49	45	79
Ripley	4	5.5	5	6.8	26	35.6	17	23.3	21	28.8	73	63	64
Rush	3	7.3	3	7.3	10	24.4	12	29.3	13	31.7	41	71	52
Saint Joseph		0.0	2	5.6	16	44.4	9	25.0	9	25.0	36	69	54
Scott	1	0.0	3	13.6	10	45.5	2	9.1	7	31.8	22	59	68
Shelby	3	2.1	8	17.0	24	51.1	11	23.4	3	6.4	47	15	91
Spencer		3.7	5	6.2	32	39.5	10	12.3	31	38.3	81	75	43
Starke	4	6.3	2	3.2	22	34.9	11	17.5	24	38.1	63	78	39
Steuben	2	3.6	6	10.7	19	33.9	8	14.3	21	37.5	56	71	48
Sullivan	2	4.2		0.0	14	29.2	8	16.7	24	50.0	48	108	13
Switzerland		0.0	1	4.0	5	20.0	8	32.0	11	44.0	25	116	7
Tippecanoe	1	1.9	1	1.9	10	18.5	18	33.3	24	44.4	54	117	6
Tipton		0.0		0.0	16	34.0	14	29.8	17	36.2	47	102	22
Union		0.0		0.0	6	28.6	8	38.1	7	33.3	21	105	18
Vanderburgh		0.0	2	6.9	13	44.8	7	24.1	7	24.1	29	66	61
Vermillion	1	4.3		0.0	6	26.1	5	21.7	11	47.8	23	109	12
Vigo	2	2.7	4	5.4	36	48.6	16	21.6	16	21.6	74	54	74
Wabash	2	3.1	5	7.8	21	32.8	20	31.3	16	25.0	64	67	60
Warren	2	5.9	2	5.9	6	17.6	7	20.6	17	50.0	34	103	20
Warrick	2	4.3	5	10.6	16	34.0	7	14.9	17	36.2	47	68	58
Washington	2	3.8	2	3.8	9	17.0	12	22.6	28	52.8	53	117	5
Wayne	1	1.5	3	4.4	29	42.6	13	19.1	22	32.4	68	76	41
Wells		0.0	6	10.3	26	44.8	13	22.4	13	22.4	58	57	70
White		0.0		0.0	10	23.3	13	30.2	20	46.5	43	123	4
Whitley	3	4.6	8	12.3	28	43.1	13	20.0	13	20.0	65	38	86
Grand Total	172		326	12.3	1,533	43.1	1,019	20.0	1,528	20.0	4,578	74	

Table 7. Comparison of the 2003 and 2008 Farmer Dissatisfaction Scores by county.

County	Score		Difference (%)	2003 Ranking	2008 Ranking
	2003	2008			
Adams	20	28	41	86	89
Allen	36	51	41	76	77
Bartholomew	69	82	19	34	34
Benton	50	86	72	56	30
Blackford	15	42	181	89	83
Boone	32	78	142	78	40
Brown	81	160	98	19	1
Carroll	68	105	54	35	17
Cass	60	98	64	46	25
Clark	80	86	8	21	29
Clay	67	73	9	36	46
Clinton	41	83	102	70	33
Crawford	39	129	230	72	3
Daviess	51	23	-54	53	90
Dearborn	83	116	39	15	8
Decatur	11	60	442	90	67
Dekalb	31	71	129	79	51
Delaware	4	44	1,011	92	80
Dubois	52	44	-15	51	81
Elkhart	15	100	567	88	23
Fayette	102	100	-2	2	24
Floyd	69	40	-42	32	84
Fountain	81	114	41	17	9
Franklin	64	57	-11	39	69
Fulton	73	84	15	28	32
Gibson	57	71	25	47	49
Grant	41	60	46	69	66
Greene	47	74	58	64	45
Hamilton	53	72	36	48	47
Hancock	38	55	44	73	73
Harrison	30	64	112	80	63
Hendricks	73	69	-5	27	55
Henry	46	52	14	67	75
Howard	26	63	140	82	65
Huntington	61	70	14	45	53
Jackson	76	75	-2	24	44
Jasper	88	105	20	12	16
Jay	48	14	-72	59	92
Jefferson	64	91	43	40	27
Jennings	71	49	-31	30	78
Johnson	39	71	82	71	50
Knox	73	43	-41	26	82
Kosciusko	91	106	16	8	15
Lagrange	17	92	441	87	26
Lake	48	51	7	58	76
Laporte	70	80	14	31	37
Lawrence	62	81	31	42	35

Table 7 continued.

County	Score		Difference (%)	2003 Ranking	2008 Ranking
	2003	2008			
Madison	30	35	16	81	88
Marion	9	38	317	91	87
Marshall	80	106	33	22	14
Martin	46	56	22	66	71
Miami	91	81	-11	10	36
Monroe	83	104	26	16	19
Montgomery	81	85	5	18	31
Morgan	52	78	51	50	38
Newton	63	102	63	41	21
Noble	36	56	55	77	72
Ohio	93	69	-26	6	56
Orange	92	111	21	7	11
Owen	52	67	30	52	59
Parke	89	112	25	11	10
Perry	62	76	23	43	42
Pike	94	39	-59	5	85
Porter	49	88	79	57	28
Posey	51	69	35	55	57
Pulaski	84	154	84	14	2
Putnam	69	65	-6	33	62
Randolph	24	45	87	84	79
Ripley	47	63	34	63	64
Rush	62	71	14	44	52
Saint Joseph	23	69	202	85	54
Scott	48	59	23	61	68
Shelby	48	15	-69	62	91
Spencer	80	75	-6	20	43
Starke	42	78	85	68	39
Steuben	47	71	52	65	48
Sullivan	96	108	13	4	13
Switzerland	91	116	27	9	7
Tippecanoe	51	117	129	54	6
Tipton	37	102	176	74	22
Union	67	105	56	37	18
Vanderburgh	74	66	-11	25	61
Vermillion	102	109	7	3	12
Vigo	37	54	46	75	74
Wabash	53	67	27	49	60
Warren	72	103	43	29	20
Warrick	78	68	-13	23	58
Washington	102	117	15	1	5
Wayne	67	76	14	38	41
Wells	48	57	19	60	70
White	85	123	45	13	4
Whitley	24	38	60	83	86
STATEWIDE	59	74	25		

Table 8. The desired future deer population trend from the 2008 Farm Operator Survey grouped by severity of deer damage claimed.

Qualitative self-assessment of crop damage by deer	Future Trend in the Deer Population				
	Substantially Increase (%)	Slightly Increase (%)	Stabilize (%)	Slightly Decrease (%)	Substantially Decrease (%)
Negligible ( <i>n</i> = 1,155)	5.8	10.04	41.47	21.65	21.04
Tolerable ( <i>n</i> = 1,323 )	3.48	11.11	48.53	26.53	10.36
Unreasonable ( <i>n</i> = 781)	1.79	0.13	1.79	11.4	84.89
Don't Know ( <i>n</i> = 890)	3.03	4.04	32.25	22.47	38.2

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State Form 24385 (R5/E-08)

Dear landowner or tenant.  
 You have been selected at random to receive the Division of Fish and Wildlife's landowner/tenant questionnaire. Please take time to answer the questions about hunter access and harvest of game species by unlicensed sportspersons on the property you own or lease. Because it is not necessary for a landowner or tenant to purchase a hunting license if they hunt on their own land or land they lease, this survey provides vital information in helping us estimate the number of hunters and harvest associated with each of Indiana's game species. Please return the survey in the enclosed envelope. **NO POSTAGE NECESSARY!**  
 Thank you for your participation.

1. What is the county where your primary farm is located?

2. Approximately how many acres do you own or lease?

3. List the approximate percentage of habitat you own/lease in each of the following categories:

Woodland/ Shrubland  % Cropland  % Pasture/hay  % Idle Grassland  %

4. What % of your family's income is gained from agriculture?

0-25%  25-50%  50-75%  75-100%

5. Please indicate which direction you would like the deer population to move in your county?

Substantially increased  Slightly increased  Kept at present levels  
 Slightly decreased  Substantially decreased

6. What percent of your crop damage was due to the following?

Beaver  % Birds  % Deer  % Groundhogs  %  
 Pigs  % Raccoon  % Squirrel  % Other  %

7. How do you feel about the amount of deer damage to your crops or woodlands within the past 12 months?

Damage was negligible  Damage was tolerable in exchange for having deer around  
 Damage was unreasonable  Don't Know

8. Please indicate below all crops (including orchards, plantations, and timber) damaged by deer in the last 12 months:

Crop Damaged	Estimated Amount of Damage	% of Crop Value Lost
<input type="text"/>	\$ <input type="text"/>	<input type="text"/> %
<input type="text"/>	\$ <input type="text"/>	<input type="text"/> %
<input type="text"/>	\$ <input type="text"/>	<input type="text"/> %

9. Are you aware the DNR has programs to assist with deer damage?  Yes  No

10. Did you contact the DNR concerning the deer damage you experienced?  Yes  No

11. Including yourself, how many members of your immediate family hunted the land you own or lease and DID NOT PURCHASE a hunting license (You do not need a license to hunt the land you own or lease)?

**\*\*PLEASE COMPLETE THE QUESTIONS ON THE BACK SIDE OF THIS SHEET\*\***

Figure 1. 2008 Landowner/Tenant Survey

**12. Who do you allow to hunt on your property (mark all that apply)?**

- Hunter who asks permission  
  Family  
  Friends  
  Lessee  
  No one

**13. How many hunters, on average, ask permission to hunt your land each year?**

- 0  
  1-2  
  3-4  
  5-10  
  10-20  
  >20

**14. How many hunters who are not family members, hunt your land each year, on average?**

- 0  
  1-2  
  3-4  
  5-10  
  10-20  
  >20

**15. Did you lease any of your land for hunting access?  Yes  No**

Please complete the following table regarding your families hunting activities on the land you own or lease (and a hunting license WAS NOT purchased) during the last year. The first line provides an EXAMPLE on how to fill out the rest of the table. The example shows a scenario where 2 family members hunted for 14 combined days and harvested 10 animals.

Species	Number of family members who hunted		Total number of days hunted		Total number harvested			
<b>EXAMPLE</b>		2	1	4		1	0	
Squirrel								
Rabbit								
Mourning dove								
Quail								
Wild pheasant								
Pen-reared pheasant								
Ruffed grouse								
Woodcock								
Crow								
Turkey								
Archery Deer Oct 1 - Nov 30					Antlered		Antlerless	
Firearms Deer Nov 15 - Nov 30					Antlered		Antlerless	
Muzzleloader Deer Dec 6 - Dec 21					Antlered		Antlerless	
Late Archery Deer Dec 6 - Jan 4					Antlered		Antlerless	



THANK YOU!!



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Figure 1. Continued.